

**EPA Superfund
Record of Decision:**

**WILLIAMS PIPE LINE CO. DISPOSAL PIT
EPA ID: SDD000823559
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SIOUX FALLS, SD
09/29/1994**

Text :

RECORD OF DECISION

WILLIAMS PIPE LINE DISPOSAL PIT SUPERFUND SITE
SLOUX FALLS, SOUTH DAKOTA

U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION VIII
DENVER, COLORADO

DECLARATION FOR THE
RECORD OF DECISION

SITE NAME AND LOCATION

Williams Pipe Line Disposal Pit Superfund Site
Sioux Falls, South Dakota

STATEMENT OF BASIS AND PURPOSE

This decision document presents the selected remedial action for the Will Line Disposal Pit Superfund Site (Site) in Sioux Falls, South Dakota. The chosen action is in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), (collectively called the Superfund Amendments and Reauthorization Act of 1980 et seq.), and, to the extent practicable, the National Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR Part 300. This decision is based on the administrative record for this Site.

The State of South Dakota, as represented by the Department of Environment and Natural Resources (DENR), has worked together with EPA on cleanup studies at Site. The concurrence of the State of South Dakota has not been received. A copy of the letter from the State will be included as an attachment to the Decision Summary.

DESCRIPTION OF THE SELECTED REMEDY

EPA has decided that No Action is necessary to address the Superfund contamination at the Site. A minimum of two years of quarterly groundwater monitoring performed to verify that unacceptable exposure will not occur in the future. This decision applies only to the Superfund Site.

DECLARATION

EPA has determined that no further action is necessary at this Superfund protect human health and the environment and its response at the Site is DENR is addressing groundwater petroleum contamination, which is exempt f regulation under CERCLA. Therefore, the Site now qualifies for inclusion Construction Completion List. The five-year review provision of CERCLA d apply to a No Action remedy.

William P. Yellowtail, Regional Administrator
Environmental Protection Agency, Region VIII

DATE

DECISION SUMMARY FOR THE RECORD OF DECISION
WILLIAMS PIPE LINE DISPOSAL PIT SUPERFUND SITE
SLOUX FALLS, SOUTH DAKOTA

SEPTEMBER 1994

U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION VIII
DENVER, COLORADO

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RESPONSIVENESS SUMMARY

DECISION SUMMARY FOR THE RECORD OF DECISION
WILLIAMS PIPE LINE DISPOSAL PIT SUPERFUND SITE
SIOUX FALLS, SOUTH DAKOTA

I. SITE NAME, LOCATION, AND DESCRIPTION

The Williams Pipe Line Disposal Pit Superfund Site (Site) is located at the Williams Pipe Line 12th Street Terminal (Terminal) at the intersection of 12th Street and 12th Street Road (Figure 1) in northwest Sioux Falls, South Dakota. The Site consists of a disposal pit, commonly called the "burn pond," and contamination originating from the burn pond. The burn pond is a small, unlined pit, about 40 feet in diameter and 7 feet deep. It is located in the northeast corner of the Terminal. With the exception of the burn pond and tank berms, which are man-made alterations, the Site and the surrounding area are essentially flat, with only a very slight slope toward Skunk Creek and to the east toward the Big Sioux River (Figure 1).

The Williams Pipe Line Terminal is located in a growing urban area. Land surrounding the Terminal is primarily commercial and industrial, with some residential. The entire 52-acre Williams Pipe Line Terminal contains 42 above ground petroleum storage tanks, a fuel loading rack, garages, an administration building, support structures (Figure 2). The property is surrounded by a 6-foot chain-link fence with 24-hour access to only authorized personnel. The current zoning and future use is industrial.

In the Sioux Falls area, groundwater in shallow unconsolidated glacial materials represents a significant source of water supply. Most municipal wells in Sioux Falls draw water from the glacial deposits, with some wells drawing water indirectly from the Big Sioux River. Numerous residences and businesses obtain their water supply from wells completed in the glacial deposits.

II. SITE HISTORY AND ENFORCEMENT ACTIVITIES

The 12th Street Terminal was constructed by the Great Lakes Pipeline Company in the early 1940s. Before its construction, the area consisted of undeveloped agricultural land. The Great Lakes Pipeline operated the 12th Street Terminal from 1945 until March 1966, when the Terminal was purchased by Williams Pipe Line Company. Bulk quantities of liquid fertilizers as well as petroleum products

were stored and conveyed at the Terminal until 1988. Currently, the Williams Pipe Line Terminal is used to transport and store a variety of petroleum products including oil, diesel fuel, unleaded gasoline, aviation gasoline, and jet fuel. Tank trucks at the Terminal are used to convey petroleum fuel to the loading racks. Delivery vehicles are filled. The burn pond was constructed in 1945 and 1987 to collect storm water runoff, often contaminated with spilled petroleum. Various areas of the Terminal. The pond also may have been used to dispose of petroleum-related and other Terminal wastes. Petroleum products accumulated on the pond surface were periodically ignited and burned off (hence the name "burn pond"). The pond no longer receives Terminal drainage, although some surface water collects in the pond following rain or snowstorms.

The environmental investigations at the Williams Pipe Line Terminal are regulated under both Federal and State authorities. Petroleum releases throughout the Williams Pipe Line Terminal are regulated by the South Dakota Department of Environment and Natural Resources (DENR).

Many of the early efforts, beginning in the 1980s, were investigations performed under State authority and directed at investigating the nature and extent of contamination from petroleum releases, such as leaks or spills, throughout

Terminal. In November 1988, Williams Pipe Line Company signed a Settlement Agreement with the State of South Dakota and the City of Sioux Falls for investigation and clean up of hydrocarbon (petroleum) spills throughout the

Releases and potential releases of hazardous substances from the burn pond within the Terminal are addressed by federal law (CERCLA/SARA). The U.S. Environmental Protection Agency (EPA) is responsible for overseeing the implementation of CERCLA/SARA regulations. Petroleum products are generally excluded from regulation under CERCLA/SARA.

In March and November 1987, EPA conducted investigations that identified related chemicals, including some CERCLA hazardous substances, in the soil and groundwater near the burn pond. Based on these results, the Site was placed on EPA's National Priorities List in 1990. On January 14, 1991, EPA sent Williams Pipe Line Company and The Williams Companies Incorporated a special notice under CERCLA Section 122(e). This initiated the negotiation process for conducting

investigation of the Site. It was determined through negotiations that Williams Pipe Line Company was the owner of the property and independent of Williams Companies Incorporated.

In 1991, Williams Pipe Line signed a legal agreement, titled an Administrative Consent, to conduct a CERCLA remedial investigation (RI) and (focussed study) (FS). The purpose of the remedial investigation, which was conducted in three phases from 1991 to 1993, was to more fully investigate the nature and extent of hazardous substance contamination in the burn pond area. Possible contaminants identified in the burn pond area soils and/or groundwater include organic compounds (VOCs), semivolatile organic compounds (SVOCs), metals, pesticides, and polychlorinated biphenyls (PCBs).

In 1994, Williams Pipe Line completed an evaluation (the focussed FS) of management practices for addressing the Superfund contamination. The focussed FS provides more detail about the costs of monitoring and describes the current stipulations for groundwater access on and near the Williams Pipe Line Terminal.

III. HIGHLIGHTS OF COMMUNITY PARTICIPATION

EPA conducted interviews with local officials and residents during March 1992 to assess community concerns about the Williams Pipe Line Site. A community plan outlining a program to address community concerns and keep citizens informed about and involved in remedial activities was distributed in June 1992. In 1992, EPA issued a fact sheet updating the community regarding ongoing investigations at the Site. The same month, EPA established an administrative contact that was available for public review at the Sioux Falls Public Library in South Dakota; the State of South Dakota Library in Pierre, South Dakota; Superfund Records Center in Denver, Colorado. EPA also established a representative for Site information at the Sioux Falls Public Library, pursuant to CERCLA Section 104. In June 1994, EPA issued a fact sheet briefly summarizing the results of investigations, the results of the Baseline Risk Assessment, and upcoming opportunities for community involvement.

EPA's Proposed Plan for remedial action at the Site was issued in fact-sheet form in July 1994. The Proposed Plan fact sheet summarized the Site history and background, the results of the Remedial Investigation, the results of the Baseline Risk Assessment, the description of the preferred remedial alternative, and information about the public meeting and comment period. On July 24, 1994, an announcement was published in the Argus Leader newspaper to inform the community that

meeting would be held by EPA. In early August, Williams Pipe Line Company issued a press release that also provided information about the public meeting.

From July 25 to August 24, 1994, EPA offered a 30-day public comment period to accept public comment on the Proposed Plan and Remedial Investigation, or new information. EPA held a public meeting at Hayward School Gymnasium in Falls on August 16, 1994, to discuss the results of the Remedial Investigation, present the Proposed Plan, and accept oral comments. A transcript of the meeting is available in the administrative record. Comments from the meeting and EPA's response to these comments are included in the Responsiveness Summary. Written comments were received during the public comment period.

IV. SCOPE AND ROLE OF RESPONSE ACTION WITHIN SITE STRATEGY

The selected alternative for the Williams Pipe Line Superfund Disposal Plant is "No Action with Groundwater Monitoring." No construction activities are associated with the "No Action" alternative. Two years of groundwater monitoring will be undertaken to confirm that no unacceptable exposures due to arsenic offsite may occur in the future.

This "No Action" alternative pertains only to the Superfund work. It is a determination that no action is warranted under other regulations and standards including State authorities. In choosing this alternative, EPA assumes that to clean up petroleum-contaminated groundwater at the Terminal will continue to be the responsibility of the State authority.

EPA believes the "No Action with Groundwater Monitoring" alternative sufficiently addresses Superfund health risk concerns for two major reasons. First, the contaminants for which the potential risks exceed the acceptable levels are unlikely. Second, much of the estimated risk is attributed to petroleum

and the petroleum groundwater contamination is being addressed by DENR under South Dakota's Chapter 34A-2, Water Pollution Control Laws. Health risk from petroleum should be adequately addressed under the State authority.

As noted in the "Summary of Site Risk" section, a potential risk might exist if someone were to drink the unfiltered groundwater that contained high levels of arsenic. Arsenic analysis of unfiltered water samples is referred to as Risk evaluations generally consider the Federal drinking water standard, unfiltered groundwater analysis. The assumption is that unfiltered groundwater samples will contain small particles that could flow with the groundwater and larger sediment particles. However, this was not the situation for the samples collected during the RI.

The groundwater data collected during the RI indicate that the filtered water would contain dissolved arsenic, more closely represents the potential contamination that may be found in drinking water near the Site. The sampling data show large amounts of sediments from subsurface materials surrounding the monitoring wells were collected with the groundwater samples, probably due to the sampling method. The unfiltered water analyses performed on these samples include sedimentary particles in addition to the small particles that might flow through the groundwater. At the high sediment content found in the samples, groundwater would not be drinkable. The filtered water analysis filters out large particles and the sedimentary particles containing arsenic, but includes arsenic dissolved in the water. Dissolved arsenic was not only below the drinking water standard, but was also found in any of the offsite filtered groundwater samples. Thus, there is no exposure or risk from dissolved arsenic when drinking this groundwater. No feasible likelihood of future exposure or risk due to the operation of the groundwater recovery system that is explained below. Groundwater monitoring

proposed as part of the "No Action" alternative to confirm that arsenic at unacceptable levels is not present in groundwater that might be used for

Additionally, DENR is continuing oversight of Williams Pipe Line's cleanup petroleum contamination in the groundwater at the Terminal. The health risk from petroleum (mostly benzene) contamination in the groundwater at the Site is being addressed through State DENR authorities. A groundwater recovery and treatment system, including components near the burn pond, is being operated under

Settlement Agreement. Data collected under the RI and State investigation indicates that the groundwater recovery system is preventing the contamination, including arsenic contamination, from moving further offsite. The proposed groundwater monitoring is expected to confirm this finding.

Groundwater recovery system components near the burn pond include one recovery well (RW-5), interception trenches 1 and 2, and the eastside treatment system. The system captures the groundwater that might otherwise move under the Terminal boundaries. The groundwater is treated prior to being discharged to the sewer system. Discharge requirements are controlled through a permit by the State of South Dakota. Williams Pipe Line has also applied for a direct discharge permit to the State. If approved, it will allow discharge of the treated water directly to Crystal Creek under the specific requirements, which include contaminant concentration limits. Thus, it does not appear that further work to clean up the CERCLA substances would provide additional benefits.

South Dakota State regulations, (reference Chapter 74:03:30, Above Ground Storage Tanks), require that before the Terminal is permanently closed, soil and groundwater contamination must be cleaned up. Therefore, before the property could be returned to residences, the contamination that might present a risk to residents would need to be addressed. Additionally, the current industrial zoning would need to be

The proposal in no way limits the State's authority under its laws. In fact, the decision is partly based on the fact the cleanup of the petroleum contamination by State authorities will continue and access to the Site and groundwater under the Terminal will continue to be controlled.

EPA has authority to revisit a "No Action" remedy. This could occur if future conditions indicate that an unacceptable risk to human health or the environment would result from exposure to hazardous substances at the Site. Additional groundwater monitoring leads to a different conclusion than presented here, EPA would review its decision.

V. SITE CHARACTERISTICS

1. Climate and Meteorology

Minnehaha County, South Dakota lies in a climatic section of the United States with the Humid Continental Warm Summer Climate, characterized by wide annual range in temperature, hot wet summers, and cold dry winters. The average annual precipitation for Sioux Falls is 24.12 inches, with spring and summer being the seasons of maximum rainfall. Average annual snowfall is 32 inches. The average daily temperature is 45.3 degrees Fahrenheit (°F). The coldest month is January with an average daily temperature of 12.4 °F, and the warmest month is July with an average daily temperature of 74.0 °F. The average wind speed and direction is from the south/southeast in the summer, and 12 mph from the north and northwest during the fall and winter.

2. Surface Water Hydrology

The principal surface water features in the area are the Big Sioux River tributary, Skunk Creek. The Site is located about two miles northwest of confluence of the two streams. Two rock quarries located about 1.25 mile of the Site expose the groundwater table as surface water. Small intermi drainages also discharge surface runoff to storm sewers, the Big Sioux Ri Skunk Creek.

Surface water runoff at the Site is a direct result of precipitation. Su the vicinity of the burn pond drains to the southeast by way of a small d located less than 100 feet southwest of the burn pond. The ultimate fate water runoff from both offsite (outside the Terminal boundaries) and onsi Terminal boundaries) sources near the burn pond is discharge to the City drain along Marion Road. Some precipitation and storm water runoff may a in the burn pond.

3. Geology

Regional surficial geology is characterized by deposits of glacial and gl origin. These outwash deposits, composed of silt, sand, and gravel, are to-35 feet thick. Thicker deposits (55-to-80 feet thick) of coarse sand occur beneath the flood plain of Skunk Creek. Basal till deposits of cla silty clay, 6- to 48-feet thick, underlie the thicker outwash (sand and g The basal till deposits become thinner to nonexistent in the alluvial val Creek. The Precambrian Sioux Quartzite bedrock occurs in the immediate a burn pond at depths of 38 to 70 feet below land surface in the area.

At the Site, the glacial deposits are divided into two units. Unit 1 (Fi composed of poorly sorted outwash deposits, and is further subdivided int subunits based on differing grain size and hydrogeologic properties. Uni of more permeable sand and gravel deposits; Unit 1B consists of less perm and clays. The outwash deposits are poorly sorted and Units 1A and 1B of interbedded, transect each other, and exhibit a cut and fill relationship underlies Unit 1, is a basal till deposit of unsorted sands, gravels, and clay and silt matrix. The basal till is 9 to 18 feet thick in the immedi burn pond. The glacial deposits are underlain by Unit 3, Sioux Quartzite Cretaceous bedrock. The bedrock is approximately 50-feet deep in the imm vicinity of the burn pond. The Site geology is illustrated in Figure 3, west geologic cross-section passing through the burn pond Site.

4. Hydrogeology

In the Sioux Falls area, the glacial outwash deposits represent a signifi water supply. The City of Sioux Falls obtains much of its drinking water municipal wells drawing groundwater from the outwash and indirectly from Sioux River. In addition, numerous Sioux Falls businesses and residences water supply from wells drawing water from the outwash deposits.

Groundwater is recharged from precipitation that infiltrates vertically i Groundwater within the outwash deposits moves horizontally toward surface bodies located at topographically lower elevations. Regional groundwater directions are east toward the Big Sioux River and south toward Skunk Cre

Groundwater flow within the outwash deposits in the burn pond area is to degree influenced by the existing groundwater recovery systems (RW-5 and interception trenches 1 and 2). Groundwater flow in the eastern half of

area is from the center of the Terminal toward the northeast, east, and south. Groundwater flow in the immediate vicinity of the burn pond is toward the southeast. Groundwater levels and flow directions in the outwash deposits are illustrated in Figure 4, which shows groundwater conditions in October 1993. Groundwater flow in the basal till (Unit 2) east of the burn pond is toward the southeast. Groundwater flow velocity in the outwash deposits (Unit 1A), before the operation of recovery well RW-5 and interception trenches 1 and 2, was approximately 3 feet per year and generally to the southeast across the Site. The groundwater velocity in the basal till is estimated to be 0.2 foot per year.

Operations of interception trenches 1 and 2 and RW-5 have lowered groundwater levels along the eastern side of the Terminal by as much as 15.5 feet. As a result of pumping, groundwater flow northeast of the Site has been reversed and groundwater gradients downgradient of the recovery systems have become less steep. The effective groundwater capture area of RW-5 includes groundwater beneath the burn pond. As a result of regional groundwater flow gradients, the effective capture area of RW-5 extends no more than 150 feet downgradient of the recovery well. The effective capture area of the trenches includes areas of the Site south of the burn pond. As a result of regional groundwater flow gradients, the effective capture area of the trench system is approximately 5 to 10 feet.

RW-5 and the northern end of trench 1 have overlapping zones of influence. Individual sumps along trenches 1 and 2 also overlap. Stagnation points and groundwater divides occur between individual pumping centers. Weak hydraulic gradients occur across sections of the trenches and between the north end of trench 1 and RW-5.

RW-5, trench 2, and most of trench 1 fully penetrate the coarse-grained materials in Unit 1A. Only the north end of trench 1 does not fully penetrate the Unit 1A materials. Local water-level gradients indicate that groundwater flow in and below the north end of the trench is influenced by recovery system operation, although the possibility of slight underflow of groundwater beneath the north end of trench 1 exists.

5. Land Use and Demography

The Terminal is currently zoned industrial. The area surrounding the Site is primarily industrial and commercial. There are houses northeast of the Site along the east side of 9th street. Residential areas also exist south of the 12th street commercial strip. A draft City Planning and Building Services land use map for the year 2015 shows the Terminal as industrial with the surrounding area remaining industrial and commercial.

A number of private wells exist in the area surrounding the Site but most are not in use or abandoned. Most of the wells near the Site that are designed for domestic use are on commercial property. The City of Sioux Falls draws most of its water from wells located 3 miles northeast of the Site. An additional city well is located 1.5 miles southeast of the Site along Skunk Creek.

Human receptors who might be potentially exposed to Site contaminants include onsite workers, and area residents and workers. "Area", in this context, refers to residential and industrial properties located adjacent to the 12th Street commercial strip. Future populations that could potentially be exposed to Site contaminants include onsite residents (if the site were to be developed for residential use) and trespassing on the property. The environmental assessment concluded that there is a threat to area wildlife exists due to very limited exposure of wildlife to Site substances.

6. Results of the Remedial Investigation

RI Phase I. The nature and extent of contamination in and around the burn pond was evaluated during the Phase I RI. The analytical results confirm that the burn pond is a source of past releases of contamination to the environment.

Soils within the burn pond contained elevated levels of volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), and total petroleum hydrocarbons (TPH), which are common constituents of petroleum products or combustion products. Except for benzene, surface soils did not contain VOCs. Surface soils contain elevated SVOCs associated with petroleum, primarily within 10 feet of the edge of the burn pond. VOCs and SVOCs are generally found in the subsurface

within 30 feet of the burn pond, and extend to depths of approximately 25 feet below the ground surface, the approximate depth of the water table at the time of sampling.

Low concentrations of pesticides (insecticides) and PCBs were detected in surface soils. Pesticides were not detected at depths greater than 5 feet, and PCBs were not detected at depths greater than 15 feet. Herbicides were detected in both surface and background soils. Several metals were detected in soils within and around the burn pond at concentrations potentially in slight excess of background levels.

Table 1 provides a summary of concentrations of Site contaminants detected in surface soils during the Phase I RI. Table 2 provides a similar summary of concentrations in background soils.

Spills or leaks of petroleum products are known to have occurred at several locations within the Terminal. Free-phase petroleum product has been detected on the surface in the vicinity of the burn pond in thicknesses of less than one foot. The thickness and areal extent of free product has gradually decreased since 1988, primarily due to operation of recovery well RW-5. At the completion of the Phase I RI, measurable free product was no longer present beneath the burn pond, but free product was still being recovered at RW-5.

VOCs and SVOCs with petroleum hydrocarbons have been detected in groundwater at the Site. With the exception of benzene in monitoring wells northeast of the burn pond, 1,2-dichloroethane (1,2-DCE) in a monitoring well east of trench 1, Site organic compounds were not detected at offsite monitoring points beyond the edge of the active recovery systems. Pesticides have not been detected in groundwater since 1988, shortly after groundwater recovery operations began in the vicinity of the burn pond. The active recovery systems appear to have reduced the extent of petroleum hydrocarbons and indirectly reduced pesticide concentrations in groundwater.

Inorganic compounds and metals have been detected in groundwater beneath the burn pond at concentrations in excess of drinking water standards. Arsenic is the only metal detected in filtered groundwater samples in excess of drinking water standards. Nitrate concentrations were elevated in groundwater north of the burn pond, and the distribution of elevated nitrates suggests a possible offsite source.

Elevated nitrate concentrations have also been detected along the southern property boundary where nitrate fertilizer was once contained in Terminal storage tanks. Nitrates are being addressed under the State clean up since not associated with the Superfund Site.

RI Phase II. The existing recovery systems have been successful in removing contaminants from the groundwater. As of 1992, RW-5 had recovered approximately 15,000 gallons of free-phase petroleum; seven pounds of dissolved petroleum.

constituents; 4,100 pounds of nitrate; and 7,000 pounds of ammonia. The trenches have recovered approximately 18,000 gallons of free-phase petrol pounds of dissolved petroleum constituents; 1,400 pounds of nitrate; and pounds of ammonia.

Groundwater in the vicinity of the burn pond area still contains VOCs and associated with petroleum hydrocarbons. The distribution of dissolved co detected during Phase II investigations was consistent with the distribut in previous years, although the areal extent of benzene northeast of RW-5 DCA east of trench 1 appears to have been reduced between 1992 and 1993. 3 provides a summary of chemical concentrations for compounds detected in groundwater samples collected during the Phase I RI, Phase II RI, and pre investigations.

Total (unfiltered) arsenic concentrations detected by Phase I and Phase I (Table 4) are believed to be primarily due to the presence of arsenic com particulates in unfiltered groundwater samples. Dissolved concentrations were, however, detected in Phase II samples collected from nine monitorin (Table 5). Dissolved (filtered) arsenic was detected in monitoring wells not detected in any offsite monitoring wells. Three of the onsite wells dissolved arsenic concentrations in excess of the drinking water standard micrograms per liter). The locations of wells listed in the tables are s 4 and 5.

The source of the arsenic contamination is unclear since it is unknown wh contaminants may have been discharged to the burn pond. Much of the arse be attributed to background or naturally occurring levels. Wells sampled background wells during Phase II did not contain dissolved (filtered) ars several showed elevated levels of total (unfiltered) arsenic.

Groundwater samples collected at the interception trenches and RW-5 conta related organic compounds and arsenic. Coupled with the fact that water samples from wells downgradient of the recovery systems did not contain S chemicals, this supports the conclusion that RW-5 and trench 1 are effect containing and recovering chemicals of concern from the groundwater.

VI. SUMMARY OF SITE RISKS

A Base Line Risk Assessment (BRA) was performed to estimate the probabili magnitude of potential adverse human health and environmental effects fro to hazardous substances associated with the Site. The public health risk followed a four step process:

- 1) contaminant identification, which identified those hazardous of potential health concern;
- 2) exposure assessment, which identified actual or potential ex pathways (routes where people contact the chemicals), charac potentially exposed populations, and determined the extent o exposure;
- 3) toxicity assessment, which considered the types and magnitud adverse health effects associated with varying amounts of th substances of concern; and
- 4) risk characterization, which integrated the three previous s summarize the actual current and future potential and risk p exposure to hazardous substances at the Site.

EPA prepared the BRA in October 1993. An addendum to the Baseline Risk Assessment was prepared in May 1994. The addendum included analytical re

from additional groundwater samples collected during the Phase II RI work. The Baseline Risk Assessment used the Site data and the process explained above to

estimate potential cancer and non-cancer risks to humans from exposure to hazardous substances at the Site in the absence of any cleanup work.

Contaminants of concern identified in the BRA and BRA Addendum are listed in Table 6. The BRA evaluated potential exposure pathways by which people may come into contact with hazardous substances from the Site. For each pathway evaluated, an average and reasonable maximum exposure (RME) estimate was calculated. The RME represents the maximum exposure that could reasonably be expected to occur given an exposure pathway at the Site.

Major pathways evaluated in the Baseline Risk Assessment include: 1) on- and offsite groundwater used as drinking water; 2) inhalation of windblown dust; 3) incidental soil ingestion. Groundwater is the primary contaminant pathway for possible exposure from the Site hazardous substances.

Current and future populations that potentially could be exposed to contamination were evaluated in the Baseline Risk Assessment included: 1) onsite workers; 2) onsite residents; and 3) area workers. "Area" refers to residents and workers on adjacent properties. Additional future populations that potentially could be exposed to contamination evaluated in the Baseline Risk Assessment include onsite residents and children trespassing on the property.

Under Superfund regulations, cancer and non-cancer risks are considered at individual sites. For cancer, resulting risk estimates are expressed in scientific notation as probability (e.g. 1×10^{-6} for 1/1,000,000). The risk indicates an individual's chance of developing cancer as a result of exposure to Site-related contamination over a 30-year period, 350 days a year. EPA generally considers estimated cancer risk estimates that fall below the range of one additional chance in ten to one additional chance in a million (1×10^{-4} to 1×10^{-6}) of developing cancer to be acceptable. This risk is in addition to the normal (larger) overall cancer risk to the general population. The range is used to allow for management and site-specific considerations that are still protective of public health. Current EPA policy is to consider cancer risk to be additive when assessing exposure to a mixture of hazardous substances.

For non-cancer risk, a comparison of acceptable background and/or safe levels of chemicals to Site contamination is made. This comparison is called a hazard quotient. If the hazard quotient is less than or equal to one, it is considered acceptable for human health protection. A hazard quotient of one or less represents a level of exposure that would not harm the most sensitive person over a 30-year period of exposure. The hazard quotient associated with each contaminant is added for each pathway.

Both the cancer and non-cancer risk estimates are generally conservative. Any uncertainty in the risk estimates is offset by the protective assumptions used in the Baseline Risk Assessment. Toxicity and exposure values are used to calculate the risk to protect sensitive individuals under the maximum exposure possible (RME). This provides for suitable public health protectiveness.

Human Health Risks

Based on the BRA, Site carcinogenic and noncarcinogenic risks are below EPA's acceptable cancer risk range and the acceptable hazard quotient, for both scenarios explained below. Tables 7 and 8 summarize those chemicals and total pathway carcinogenic (cancer) risks that exceed one additional

thousand of developing cancer, and the noncarcinogenic hazard quotients to one. Exposure to contaminants of concern through other pathways did not unacceptable risks.

The two exceptions noted above are a hypothetical resident living onsite, resident drinking unfiltered groundwater that includes total arsenic. The onsite resident risk is due to drinking groundwater or a child incidentally amounts of burn pond soils. As explained in the following paragraphs, the apparent current or likely future exposure under these scenarios. Since exposure pathways exist, there is no health risk.

The onsite resident scenario conservatively assumes someone is living on drinking the groundwater at current contamination levels for a period of is a child who incidentally eats burn pond soil. The potential cancer risk resident is based primarily on exposure to benzene and arsenic (total or the groundwater. Benzene is a hazardous substance and a common constituent petroleum. At high levels and/or long-term exposure benzene can cause le

type of cancer. Exposure to high levels of arsenic may lead to skin disease cancer. The risk to a child living onsite who might eat soils is caused benzo(a)pyrene, a SVOC associated with petroleum.

Currently, no residents live onsite, the Terminal is fenced, and access to there is no exposure to groundwater contaminated with arsenic and, thus, The contaminated groundwater is prevented from moving offsite by the groundwater recovery system which is operated under direction of DENR. The system is operated to capture and treat the groundwater contaminated with petroleum constituents, including benzene and benzo(a)pyrene. The groundwater that the high levels of arsenic is also being captured by this system, thus preventing contamination from moving to the area east of the Terminal. As the petroleum groundwater contamination is cleaned up as required by the State, the arsenic groundwater contamination will also be cleaned up. The State may also address petroleum contamination in the burn pond soil under its Settlement Agreement Williams Pipe Line.

Under the second exception, some risk to area residents would exist under land-use scenario if people were drinking unfiltered groundwater contaminated (total) arsenic. However, groundwater sampling data showed that no exposure occur. Private drinking wells are generally constructed to remove sediment groundwater. The RI groundwater samples that contained high total arsenic contained high amounts of sediments and would be unfit to drink. Dissolved levels, that potentially would be found in filtered groundwater samples, determined to more closely represent what might be found in drinking water dissolved arsenic was found in the offsite groundwater, so no exposure to contaminant exists for area residents potentially drinking the groundwater. Additionally, most area residents are connected to the city water supply.

Environmental Risk

The environmental assessment determined that no real threat to area wildlife due to very limited exposure of wildlife to hazardous substances. Additionally is a very small likelihood that any Site impacts should have any significant wide effects.

VII. DESCRIPTION OF THE NO ACTION ALTERNATIVE

EPA has determined based on the results of the RI, BRA, and considering S

conditions, that No Action is needed for remediation of the groundwater at the Williams Pipe Line Disposal Pit Superfund Site. There are no construction activities associated with the No Action decision. However, monitoring will be performed to verify the conclusions that are based on the RI data.

At a minimum, two years of monitoring on a quarterly basis will be performed to confirm that no unacceptable exposures will likely occur in the future. Groundwater monitoring should confirm that no unacceptable levels of arsenic are migrating from underneath the Williams Pipe Line Terminal to areas near the Site. A number of existing monitoring wells are located on and near the Site (see Appendix A). A subset of the wells on or near the Site will be selected as the groundwater monitoring points. The cost of the monitoring for two years is estimated at \$100,000.

This determination applies only to the Superfund Site and associated contamination. It is not a determination that no action is warranted under other regulatory statutes, including State authorities. Petroleum related contaminants (including benzene) are being investigated and cleaned up under State authorities.

VIII. EXPLANATION OF SIGNIFICANT CHANGES

EPA distributed a Proposed Plan (preferred alternative) for remediation on July 1994. The Proposed Plan described EPA's decision to pursue no further action with one to two years of groundwater monitoring at the Williams Pipe Line Disposal Pit Superfund Site. No significant changes have been made to the No Action Groundwater Monitoring decision described in the Proposed Plan. However, the Selected Remedy specifies that at a minimum, two years of quarterly groundwater monitoring is required.

FIGURES

TABLES

COMPANY 12TH ST
TERMINAL

SUPERFUND SITE

Contaminants Detected in
Surface Soils During Phase I RI

milligrams/kilogram)

Surface Soils (n = 5)				Background Surface Soils		
Surface Soils		Surface Soils Outside Burn Pond		(n = 16)		
Number of	Minimum	Location of	Previous	Number of	Minimum	Average
Average	Maximum					
of						
Detections	Concen-		C of C	Detections	Concen-	Concen-
Concen-	Concen-	Maximum	Detections	Concen-	Concen-	Concen-
tration	tration				tration	tration
Detection		tration	tration	tration	Detection	
0.31J	Methylene Chloride	N		ND	ND	
0.31	0.31J	SS-01,0"-6"		2	0.016	0.02
	Acetone		N		ND	0.02
	ND					
1	0.028J	0.028	0.028J	SB-13,0"-6"		
ND	Carbon Disulfide		N		ND	
	ND					
	1,1-Dichloroethene				ND	
	ND			ND		ND
	trans-1,2-Dichloroethene				ND	
ND	ND				ND	
	2-Butanone		N		ND	
0,081J	0.081	0.081J				
SS-04,0"-6"			ND		ND	
	Vinyl acetate				ND	ND
ND				ND	ND	
	1,1,1-Trichloroethane				ND	
ND	ND					
	ND		ND			
	Bromodichloromethane				ND	
ND	ND					
	ND			ND		
	1,2-Dichloropropane				ND	
ND	ND					
	ND		ND			
	cis-1,3-Dichloropropene				ND	
ND	ND					
	ND		ND			
	Trichloroethene		N		ND	
ND	ND					
	ND		ND			
	1,1,2-Trichloroethane				ND	
ND	ND					
	ND		ND			

	Benzene			N		ND
0.83	0.83					
SS-01,0"-6"		1	0.19J	0.19	0.19J	SB-06,0"-6"
	Bromoform					ND
	ND					
	ND			ND		
	4-Methyl-2-Pentanone					ND
0.32J	0.32	0.32J				
SS-01,0"-6"			ND		ND	
	2-Hexanone					ND
	ND					
	ND			ND		
	Tetrachlorethene					ND
	ND					
	ND			ND		
	Toluene			N		ND
26	26					
SS-01,0"-6"			ND		ND	
	Chlorobenzene			N		ND
ND		ND				
	ND			ND		
	Ethylbenzene			N		ND
0.34J	0.34	0.34J				
SS-01,0"-6"			ND		ND	
	Styrene					ND
	ND					
	ND			ND		
	Xylene (Total)			N		ND
0.43J	0.43	0.43J				
SS-01,0"-6"			ND		ND	
	trans-1,4-Dichloro-2-butene					ND
ND		ND				
	ND				ND	
	Ethyl methacrylate					ND
ND		ND				
	ND			ND		
	1,2,3-Trichloropropane					ND
ND		ND				
	ND				ND	
	Ethanol					ND
	ND					
	ND		ND			
	SEMIVOLATILE COMPOUNDS					
	Phenol			N		ND
	ND					
	ND			ND		
	4-Methylphenol			N		ND
13	13	13				
SS-01,0"-6"			ND		ND	
	Naphthalene			N		ND
	ND					
	3	0.041J	0.18	0.42J	SB-07,0"-6"	
	4-Chloro-3-methylpheno					ND
0.67J	0.67	0.67J				
SS-01,0"-6"			ND		ND	
	2-Methylnaphthalene			N	1	0.12J
1	1.1J	1.1				0.12
1.1J	SS-01,0"-6"		2	0.048J	0.074	1.12J SB-07,0"-6"
	Acenaphthene			N		ND
ND		ND				
	3	0.11J	0.21	0.37J	SB-07,0"-6"	

ND	Dibenzofuran	ND		N		ND
2	0.041J	0.13	0.22J	SB-07,0"-6"		
	2,4 -Dinitroluene					ND
	ND					
	Diethylphthalate		ND			ND
1	2.6	2.6	2.6	SS-11,0"-6"		
	Fluorene		N			ND
	ND					
2	0.12J	0.22	0.32J	SB-07,0"-6"		
	N-Nitrosodiphenylamine (1)					ND
ND	ND					
	Phenanthrene	ND		ND		ND
0.87J	1.6	2.4J	N			
SS-04,0"-6"		11	0.057J	0.54	2.7J	SB-07,0"-6"
	Anthracene		N			ND
0.74	1.4J					
SS-04,0"-6"		7	0.046J	0.21	0.64J	SB-07,0"-6"
	Di-n-butylphthalate		N			ND
ND	ND					
	ND			ND		
	Fluoranthene		N		1	0.067J 0.067
2	0.57J	1.6				
2.6J	SS-04,0"-6"		14	0.045J	0.65	3.1 SB-07,0"-6"
	Pyrene			N	1	0.10J 0.10
0.52J	1.4	2.6J				
SS-04,0"-6"		14	0.043J	0.53	2.4J	SB-07,0"-6"

Source: Site Characterization Summary, Vol. III

COMPANY 12TH ST
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SUPERFUND SITE

Contaminants Detected in
Surface Soils During Phase I RI

milligrams/kilogram)

Surface Soils			Background Surface Soils			
(n - 5)			(n = 16)			
Surface Soils Outside Burn Point			Previous			
Number of	Minimum	Location of	Number of	Minimum	Minimum	Average
Average	Maximum		Number of	Minimum	Average	Maximum
of			C of C	Detections	Concen-	Concen-
Detections	Concen-		Detections	Concen-	Concen-	Conce
Concen-	Concen-	Maximum	Detections	Concen-	Concen-	Conce
Maximum						
			tation	tation	tation	Detection

tration	tration	tration	Detection	tration	tration
1	Benzo(a)anthracene	1.0		1	0.072J 0.72
1.0J	SS-04,0"-6"	12	0.043J	0.37	1.5J SB-07,0"-
	Chrysene		Y	1	0.11J 0.11
1.1J	SS-04,0"-6"	13	0.039J	1.27	1.3J SB-07,0"-6"
	bis(2-Ethylhexyl)phthalate		Y	1	0.13J 0.13
1	SS-01,0"-6"	8	0.051J	0.20	0.46J SB-07,0"
0.79J	Benzo(b)fluoranthene		Y	1	0.11J 0.11
1	SS-04,0"-6"	11	0.058J	0.38	1.3J SB-07,0"-6"
0.53J					
	Benzo(k)fluoranthene		Y	1	0.10J 0.10
1	SS-04,0"-6"	11	0.061J	0.29	1.2 SB-07,0"-
0.63J	Benzo(a)pyrene		Y	1	0.090J 0.090
1	SS-04,0"-6"	12	0.038J	0.35	1.4 SB-07,0"-6"
0.63J	Indeno(1,2,3-cd)pyrene		Y	1	0.072J 0.072
ND	ND	6	0.059J	0.22	0.73 SB-07,0"-6"
	Dibenz(a,h)anthracene				ND
ND	ND				
	Benzo(g,h,i)perylene				
ND	7,12-Dimethylbenzo(a)anthracene				
ND	ND				
	Diphenylamine				ND
	ND				
	ND				
	PESTICIDE/AROCLOR COMPOUNDS				
	Heptachlor epoxide		Y	1	0.0011J 0.0011
ND	ND	2	0.00074J	0.0074	0.014J SB-11,0"-6"
	Dieldrin		N	1	0.0031J 0.0031
ND	ND				
	Endrin		ND		ND
1	0.020	0.020	0.020		SB-16,0"-6"
	Methoxychlor		N		ND
ND	ND				
	Endrin ketone		ND	1	0.0074JN 0.0074
ND	ND	1	0.0039J	0.0039	0.0039J SB-16,0"-6"
	Endrin aldehyde				ND
0.13JN	0.13	0.13JN			
SS-05,0"-6"			ND	ND	
	alpha-Chlordane		N		ND
ND	ND				
	2	0.0019J	0.0036	0.0052J	SB-11,0"-6"
	gamma-Chlordane		N		ND

ND		ND					
	3	0.0011J	0.010	0.019	SS-06,0"-6"		
	Aroclor-1254		Y			ND	
ND		ND					
	13	0.049J	0.77	7.5	SB-14,0"-6"		
	HERBICIDE COMPOUNDS						
	2,4-D					ND	
	ND						
	ND		ND				
	2,4-DB					ND	
	ND						
	ND		ND				
	2,4,5-T					ND	
0.0083	0.0083J						
SS-01,0"-6"		1	0.0002J	0.0002	0.0002J	SB-08,0"-6"	
	2,4,5-TP (Silvex)					ND	
	ND						
	1	0.00038J	0.00038	0.00038J	SB-11,0"-6"		
	Dalapon				1	0.0029J	0.0029
ND		ND					
			ND		ND		
	Dicamba					ND	
	ND						
	ND		ND				
	Dichloroprop					ND	
	ND				ND		
	Dinoseb					ND	
	ND						
	ND		ND				
	MCPA					ND	
	ND				ND		
	MCPP			ND	ND		
ND			ND				ND
	DLOXIN AND FURAN						
	Total HxCDD					NA	
	ND		ND				
	1234678-HpCDD					NA	
0.00004	0.00007						
0.00010	SS-01,0"-6"			NA		NA	
	TotalHpCDD					NA	
0.00004	0.00013	0.00021					
SS-01,0"-6"			NA		NA		
	OCDD					NA	
0.00082	0.00082						
SS-01,0"-6"			NA		NA		
	Total TCDF					NA	
0.00003	0.00004	0.00004					
SS-01,0"-6"			NA		NA		
	Total PeDCF					NA	
0.00014	0.00027	0.00039					
SS-03,0"-6"			NA		NA		
	234678-HxCDF					NA	
0.00001J	0.00001						
0.00001J	SS-03,0"-6"			NA		NA	
	Total HxCDF					NA	
0.00015J	0.00017	0.00018J					
SS-01,0"-6"			NA		NA		
	1234678-HpCDF					NA	
0.00001M	0.00002						
0.00002	SS-01,0"-6"			NA		NA	
	Total-HpCDF					NA	

0.00004	0.00008	0.00012				
SS-01,0"-6"			NA	NA		
OCDF					NA	
0.00006	0.00006					
SS-01,0"-6"			NA	NA		
TPH-IR						
TPH-IR						
190	1140	4000		1	34	34
SS-05,0"-6"	10	33		360		

Source: Site Characterization Summary, Vol. III

TAB
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SUPERFUND SITE

Contaminants Detected in
Surface Soils During Phase I RI

miligrams/kilogram)

Surface Soils			Background Surface Soils			
(n = 5)			(n = 16)			
Surface Soils Outside Burn Pond			Previous			
Number of	Minimum		Number of	Minimum	Average	
Average	Maximum	Location of	Minimum	Average	Maximum	
Location of						
Dectections	Concen-		Dectections	Concen-	Concen-	
Concen-	Concen-	Maximum	Concen-	Concen-	Concen-	
tration	tration		tration	tration	tration	
Detection		tration	tration	tration	Detection	
TOTAL MEALS						
Aluminum			2	9230	10400	
7990	10800					
13200	SS-01,0"-6"	16	2080	8550	17700	SS-11,0"-
	Antimony		Y		ND	
	ND		ND			
	ND					
5.5J	Arsenic	Y	2	5.9	6.6	7.2J
	13	22.9J	SS-03,0"-6"	16	5.1J	SS-12,
	Barium	N	2	161	183	205
153	178	SS-01,0"-6"	16	74.9J	201	SS-
	Beryllium		N	1	0.58	0.58
ND						
ND		2	0.13J	0.26	0.4	SS-12,0"-6"
	Cadmium	N				
0.99	1.1J					
SS-04,0"-6"		11	0.29J	0.7	2.2	
	Calcium			2	7360J	9680
4380	18100	55900	SS-03,0"-6"	16	6800	1200
						25500
	Chromium	N	2	12.4	13.7	14.9
						SS-

23	27.2	SS-01,0"-6"	16	5J	14	26.
Cobalt		N	2	7.6	9.7	11.8 SS-
10	11.8	SS-04,0"-6"	16	3.7	9	13.7
Copper		N	2	14.7	14.9	15
30.8	38.3	SS-04,0"-6"	16	4.8J	16.2	49.6
Iron		2	15300	15600	15900	SS-13
14200	23300	51800 SS-04,0"-6"	16		75300	15800
Lead		N	2	21.2	22.4	23.6J SS-12
222	436	SS-04,0"-6"	16	9.4J	48.8	122
Magnesium		2	3550	3790	4030J	SS-13
3840	4690J	SS-03,0"-6"	16	3260	7600	21500J
Manganese		Y	2	839	940	1040J SS-13
934						
1450	SS-03,0"-6"	16	823J	1910	8130J	SS-10,0"-6
Mercury		N	2	ND		ND
0.39	SS-04,0"-6"	1	0.13	0.13	0.13	SS-06,0"-
Molybdenum			2	1.5	1.75	2
2.3	5	SS-04,0"-6"	16	0.87	1.9	3.9J
Nickel		N	2	17.1	19.5	21.8
22.4	26.5	SS-04,0"-6"	16	11	20.2	32.5J
Potassium		1	1730	1930	2130	SS-12
1290	1810	SS-01,0"-6"	16	432	1470	3030
Selenium		N		0.4	0.4	0.4
0.38	0.53	SS-01,0"-6"	9	0.2J	0.5	1.2
Silver		N	1	ND		ND
ND			ND		ND	
Sodium			304	304	304	SS-
186	219	316 SS-01,0"-6"	10		80.2	18
Thallium		N	2	ND		ND
ND		1	0.29	0.29	0.29	SS-10,0"-6"
Vanadium		N	2	19.9	24.1	28.3
24.2	29	SS-01,0"-6"	16	7.4J	22.5	44.7
Zinc		N	62.J	70.1	78.1	SS-12,0"
112	135	Ss-01,0"-6"	16	25.7J	104	386

Only detect compounds are listed. Minimum detections reported are above detection limit.

ND = Not Detected

J = Estimated Concentration

JN = Numerical Value Represents Approximate Concentration

M = Estimated Maximum Concentration

n = number of samples

Previous C of C = Previous chemical of concerns as reported in the EPA Co Model, April 16, 1992.

Blanks indicate that the compound was not included in the April 16, 1992 report. no

Duplicate samples were collected during the Phase I RI. Duplicate detect included in the Number of

Detections, however, duplicate results were used to calculate the Average Detec

Source: Site Characterization Summary, Vol. III

COMPANY 12TH ST
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SUPERFUND SITE

Contaminants Detected in
Subsurface Soils During Phase I RI

(Results

Subsurface Soils (n = 15)			Background Subsurface Soils Subsurface Soils Outside Burn Pond (n = 109)			
Number of Minimum Maximum	Average Location of	Maximum	Previous Location of	Number of Detections	Minimum Concen- Concen- tration Concentration	Average Concen- Concen- tration Concentration
VOLATILE COMPOUNDS						
Methylene Chloride						
0.18J	8.4	43J	N		ND	
SB-04,3.0'-3.4'		25.000	0.002J	0.930	21	SB-07,10'-15'
Acetone						
1	32J	32	32J	SB-01,02'-04'	9	0.006J 0.011
SB-11,10'-15'					20.000	0.
Carbon Disulfide						
ND			N	1	0.005J	0.005
ND		1.000	0.003J	0.003	0.003J	SB-11,45'
1,1-Dichloroethene						
ND		ND			ND	
	1.000	0.002J	0.002	0.002J	SB-13,05'-10'	
trans-1,2-Dichloroethene						
ND		ND			ND	
	2.000	0.13J	0.140	0.14J	SB-09,05'-10'	
2-Butanone						
4	6.6J	24	N	4	0.029J	0.053
72J	SB-01,02'-04'	13.000	0.029J	7.000	11	SB-11,05
SB-11,30'-35'						
Vinyl acetate						
36	36J					ND
SB-01,04'-06'			ND		ND	
1,1,1-Trichloroethane						
ND		ND			ND	
	1.000	0.005J	0.005	0.005J	SB-13,05'-10'	
Bromodichloromethane						
ND		ND			ND	
	1.000	0.14J	0.140	0.14J	SB-09,05'-10'	
1,2-Dichloropropene						
ND		ND			ND	
	2.000	0.14J	0.150	0.16J	SB-09,15'-20'	
cis-1,3-Dichloropropane						
ND		ND			ND	
	2.000	0.14J	0.220	0.26J	SB-09,15'-20'	
Trichloroethene						
ND		ND	N		ND	
	2.000	0.14J	0.150	0.16J	SB-09,15'-20'	

ND	1,1,2-Trichloroethane	ND				ND	
	1.000	0.16J	0.180	0.20J	SB-09,15'-20'		
	Benzene		N		ND		
0.28J	6.7	23J					
SB-01,04'-06'		7.000	0.14J	0.740	3.7J	SB-07,10'-15'	
	Bromoform					ND	
ND		ND					
	1.000	0.21J	0.210	0.21J	SB-09,15'-20'		
	4-Methyl-2-Pentanone				ND		
2.1J	2.1	2.1J					
SB-05,01'-01.5		2.000	0.002J	0.005	0.007J	SB-13,00'-05'	
	2-Hexanone					ND	
ND		ND					
	1.000	0.022	0.022	0.022	SB-15,00'-05'		
	Tetrachloroethene				ND		
ND		ND					
	1.000	0.16J	0.160	0.16J	SB-09,15'-20'		
	Toluene		N		2	0.001J	0.002
15	3.2J	52					
3.2J	SB-01,04'-06'		22.000	0.22J	4.900	44.000	SB-07,1
	Chlorobenzene		N		1	0.001J	0.001
	ND						
ND			2.000	0.17J	0.180	0.20J	SB-09,15'
	Ethylbenzene		N		1	0.001J	0.001
15	2.2J	22					
57J	SB-01,04'-06		29.000	0.016J	4.700	23.000	SB-16.15
	Styrene					ND	
		ND					
	3.000	0.13J	0.190	0.28J	SB-09,15'-20'		
	Xylene (Total)		N		5	0.002J	0.036
15	5.3 J	69					
240J	SB-05,03'-03.5		35.000	0.009J	15.000	60.000	SB-06,1
	trans-1,4-Dichloro-2-butene					ND	
ND		ND					
	2.000	7.2J	9.100	11.000	SB-09,20'-25'		
	Ethyl methacrylate				ND		
0.66J	1.8	2.8J					
SB-02,04'-05		7.000	0.40J	1.200	2.500	SB-09,20'-25'	
	1,2,3-Trichloropropane					ND	
ND		ND					
	1.000	0.16J	0.160	0.16J	SB-07,00'-05'		
	Ethanol				3	0.011J	0.17
ND	10	10J					
SB-03,00'-02'		2.000	16J	610.000	1200J	SB-11,30'-35'	
	SEMIVOLATILE COMPOUNDS						
	Phenol		N			ND	
19	32J						
SB-01,00'-02'			ND		ND		
	4-Methylphenol		N			ND	
ND		ND					
		ND		ND			
	Naphthalene		N			ND	
2.7J	53	210.000					
SB-01,00'-02'		28.000	0.060	6.900	44.000	SB-07,10'-15'	
	4-Chloro-3-methylphenol					ND	
ND		ND					
			ND		ND		
	2-Methylnaphthalene		N			ND	
10.000	169						
620.000	SB-01,00'-02'		33.000	0.039J	23.000	110.000	SB-0

	Acenaphthene			N			ND
2.3	8.5	22J					
SB-01,04'-06'		29	0.052J	1.0	4.6	SB-16,20'-25'	
	Dibenzofuran		N			ND	
2.8	9.7	28J					
SB-01,02'-04'		21	0.088	0.98	3.8	SB-16,20'-25'	
	2,4-Dinitrotolunene					ND	
ND		ND					
	1	1.7J	1.7	1.7J	SB-09,10'-15'		
	Diethylphthalate				ND		
ND		ND					
		ND		ND			
	Fluorene		N			ND	
	16	33J					
SB-01,02'-04'		31	0.080J	1.8	7.9	SB-16,20'-25'	
	N-Nitrosodiphenylamine (1)					ND	
ND		ND					
		3	0.36J	0.91	2.0J	SB-09,15'-20'	
	Phenanthrene		N			ND	
5.1J	61	190					
SB-01,00'-02'		36	0.061	6.4	24J	SB-07,10'-15'	
	Anthracene		N			ND	
7.3J	7.3	7.3J					
SB-04,02'-04'		4	0.038J	0.40	0.82	SB-15,00'-05'	
	Di-n-butylphthalate		N			ND	
3.9J	10	19					
SB-05,02'-04'		5	0.044	0.069	0.078	SB-15,10'-15'	
	Fluoranthene		N			ND	
ND		ND					
	5	0.062J	1.1	6.3	SB-15,00'-05'		
	Pyrene		N			ND	
5.9	15J						
SB-01,00'-02'		17	0.043J	0.66	5.2	SB-15,00'-05'	
	Benzo(a)anthracene					ND	
ND		ND					
	4	0.065	0.83	3.1	SB-15,00'-05		
	Chrysene		Y		ND		
ND		ND					
	4	0.063	0.88	3.3	SB-15,00'-05'		
	bls(2-Ethylhexyl)phthalate		Y		13	0.041J	0.8
	ND						
ND		61	0.049J	2.1	8.7	SB-15,45	
	Benzo(b)fluoranthene		Y		ND		
ND		ND					
	4	0.048J	0.72	2.7	SB-15,00'-05'		
	Benzo(k)fluoranthene		Y		ND		
ND		ND					
	3	0.045J	0.94	2.7	SB-15,00'-05'		
	Benzo(a)pyrene		Y		ND		
ND		ND					
	3	0.043	0.82	3.1	SB-15,00'-05'		
	Indeno(1,2,3-cd)pyrene		Y		ND		
ND		ND					
	2	0.047	0.72	1.4	SB-15,00'-05'		
	Dibenz(a,h)anthracene				ND		
ND		ND					
	1	0.88	0.88	0.88	SB-15,00'-05'		
	Benzo(g,h,i)perylene				ND		
ND		ND					
	1	1.4	1.4	1.4	SB-15,00'-05'		

	7,12-Dimethylbenzo(a)anthracene				ND
ND	ND				
	1	0.26	0.26	0.26	SB-15,00'-05'
	Diphenylamhe				ND
ND	ND				
	1	0.32	0.32	0.32J	SB-14,10'-15'

Source: Site Characterization Summary, Vol. III

COMPANY 12TH ST
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SUPERFUND SITE

Contaminants Detected In
Subsurface Soils During Phase I RI

milligrams/kilogram)

Subsurface Soils (n = 15)			Background Subsurface Soils Subsurface Soil Outside Burn Pond (n = 109)			
Number of Minimum Maximum	Avarage Location of	Maximum	Previous Location of C or C	Number of Detections	Minimum Concen-	Average Concen-
Detections Concen- Maximum	Concen- Concen-	Maximum	Detection	Concen-	Concen-	Conc
tration Concentration	tration	tration	tration	tration	tration	tration
	PESTICIDE/AROCLOR COMPOUNDS					
ND	Heptachlor epoxide		Y		ND	ND
	1	0.0011J	0.0011	0.0011J	SB-08,00'-05'	
	Dieldrin		N		ND	
	ND					
	ND			ND		
	Endrin		N		ND	
	2	0.0038J	0.0039	0.004J	SB-06,20'-25'	
	Methoxychlor		N		ND	
ND	ND					
	0.0083J		0.0083	0.0083J	SB-09,40'-45'	
	Endrin ketone				ND	
ND	ND					
	ND			ND		
	Endrin aldehyde				ND	
ND	ND					
	ND			ND		

ND	alpha-Chlordane		N		ND	
	ND					
	1	0.00059J	0.00059	0.00059J	SB-08,00'-05'	
	gamma-Chlordane		N		ND	
ND	ND					
	1	0.00073J	0.00073	0.00073J	SB-08,00'-05'	
	Aroclor-1254		Y		ND	
ND	ND					
	4	0.030J	0.06	0.094J	SB-12,00'-05'	
	HERBICIDE COMPOUNDS					
	2,4-D				1	0.0012J 0.0012
	ND					
ND			6	0.0044J	0.0131	0.019J SB-06,05'
	2,4-DB				1	0.0022J 0.0022
3	0.021J 0.053					
0.070J	SB-01,00'-02'		2	0.001J	0.0015	0.0019J SB-13
	2,4,5-T				4	0.0012J 0.0015
	ND					
ND			9	0.0002J	0.0007	0.0014J SB-14,30'
	2,4,5-TP (Silvex)				3	0.00037J 0.00066
	ND					
ND			7	0.00013J	0.00034	0.001J SB-07,1
	Delapon				2	0.0047J 0.0055
	ND					
ND			ND		ND	
	Dicamba				8	0.0002J 0.0005
3	0.0039J 0.010					
0.018J	SB-03,00'-02'		1	0.0006J	0.0006	0.0006J SB-15
	Dichloroprop				6	0.0039J 0.0073
	ND					
ND			4	0.0016J	0.0043	0.0097J SB-06,15'
	Dinoseb					ND
	ND					
	ND		ND			
	MCPA				1	0.20J 0.20
2.5J	11	32J				
SB-04,02'-04'		10	0.12J	0.97	2.5J	SB-08,20'-25'
	MCPP			ND		ND
	ND			ND		
	DIOXIN AND FURAN					
	Total HxCDD					NA
0.00001	0.00001	0.00001				
	SB-03,00'-02'		NA		NA	
	1234676-HpCDD					NA
0.00001	0.00003					
0.00005	SB-01,02'-04'	SB-01,02'-		NA		NA
	Total HpCDD					NA
0.00001	0.00003	0.00005				
	SB-03,00'-02'		NA		NA	
	OCDD					NA
	ND					
	NA		NA			
	Total TCDF					NA
0.000005	0.00001	0.00003				
	SB-03,00'-02'		NA		NA	
	Total PeDCF					NA
0.00007	0.00007	0.00007				
	SB-03,00'-02'		NA		NA	
	234676-HxCDF					NA
ND		ND				
	NA			NA		

Total HxCDF			NA		
0.00001	0.00005	0.00008J			
SB-03,00'-02'			NA	NA	NA
1234678-HpCDF					NA
0.000004	0.00005				
0.00022	SB-01,00'-02'		NA		NA
Total HpCDF					NA
0.000004	0.00006				
0.00022	SB-01,00'-02'		NA		NA
OCDF					NA
0.000007M	0.00007	0.00024			
SB-01,00'-02'			NA	NA	
TPH-IR					
TPH-IR					ND
1900	37100	200000			
SB-02,02'-04'			43	51	4080
TOTAL METALS					23000
Alumimum					SB-07,10'-15'
					21
15	3120	7080			1410J
11600	SB-01,00'-02'		109	812	7250
Antimony			Y		
6.3J	6.3	6.3J			2
SB-04,00'-02'			2.5J	2.8	2.3J
Arsenic			Y		3.2
1.5J	10.9	26.7J			21
SB-01,00'-02'			2	6.1	3J
Barlum			N		SB-16,30'-35'
69.9	129				2
SB-01,02'-04'			109	13.3	5.7
Belyllium			N		
ND					1340J
11	0.08				ND
Cadmium			0.24	0.52	SB-07,40
13	0.19	1	N		
SB-01,00'-02'					SB-10,00'-05'
2.9J	Calcium		41	0.26J	10
					0.29
15	8540J	24800			0.47
70100J	SB-05 04'-06'		109	1700J	
Chromium			N		0.64
15	10.3	34			2.4
124	SB-01,02'-04'		109	1.9J	SB-16,4
Cobalt			N		21
4.4	8.6	16			4880J
SB-04,00'-02'			1.8	5.6	42600
Copper			N		
12.5	41.1				20
110	SB-01,00'-02'		109	2J	SB-10,45'-50'
Iron					21
7570J	23600				4.7J
102000J	SB-04,00'-02'		109	3790J	12.6
Lead			N		
81.5J	376	1210			8
SB-01,02'-04'			1.5	7.2	21
Magnesium					31J
15	3160	6590			SB-08,00'-05'
18700	SB-05,04'-06'		109	404	3300J
Manganese			Y		10500
15	671	1000			
1500	SB-04,04'-06'		109	93.9	7360
Mercury			N		31600J
0.47	0.53	0.59			183
					751
					745
					3200J
					SB-08,3
					0.12

SB-01,00'-02'	2	017	0.27	0.37	SB-12,45'-50'
Molybdenum			21	0.59	1.5
0.92 2.9					
13 SB-04,00'-02'	87	0.65	2.0	6.0	SB-06,40'
Nickel		N	21	9.4	17.2
9.1J 19.5	41.9				
SB-04,00'-02'	105	4	13.2	39.6	SB-09,45'-50'
Potassium			21	314	1220
383 931					
1530 SB=01,00'-02'	83	149	659	2040	SB-15,4
Selenium		N	8	0.26J	0.94
0.08 0.21					
0.36 SB-01,02'-04'	38	0.11	2.3	26.9J	SB-12,4
Silver		N		ND	
ND					
1 0.89	0.89	0.89	SB-07,40'-45'		
Sodium			16	143	209
79.9 147	253				
SB-01,02'-04'	64	60.4	138	628	SB-13,05'-10'
Thallium		N	9	0.21	0.3
0.22 0.26	0.29J				
SB-01,02'-04'	7	0.25	0.3	0.39	SB-16,45'-50'
Vanadium		N	21	7.3	27.1
8.9J 17.2					
29.8 SB-01,00'-02'	109	4.6	16.1	54.5J	SB-15,4
Zinc		N	18	19.6	40.4
46.5 107	245				
SB-01,02'-04	109	10J	28.6	62.4J	SB-16,40'-45'

Only detect compounds are listed. Minimum detections reported are above detection limit.

ND = Not Detected

J = Estimated Concentration

JN = Numerical Value Represents Approximate Concentration

M = Estimated Maximum Concentration

n = approximate number of samples

Previous C or C = Previous chemical of concern as reported in the EPA Con Model, April 16, 1992.

Blanks indicate that the compound was not included in the April 16, 1992 report. no

Duplicate samples were collected during the Phase I RI. Duplicate detect included in the Number or Detections, however, duplicate result were used to calculate the Average Detecti

Source" Site Characterization Summary, Vol. III

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BURN PON

Groundwater Samples
Collected Summary of Chemical Concentrations of C

During Phase I, Phase
(Results i

Previous (Non-Validated) Ground-water Samp

Ground-water Samples		Minimum	Maximum	Location
ANALYTES				
Minimum	Maximum			
Location of Maximum		Dectection	Dectection	Decte
Dectection	Dectection			
		ug/L	ug/L	
VOLATILES				
B-4, 11/87	Acetone	6J	170	EPA-4,
P-06, 9/92	Benzene	0.7J	2900	I-12,1
EPA-3, 11/87	Bromochloromethane	NA	NA	
MW-49, 10/93	Bromodichloromethane	1	27	Cramers
B-1, 3/87	2-Butanone	ND	ND	
RW-5, 10/93	n-Butylbenzene	NA	NA	
	Carbon Disulfide	9	17	EPA-3,
	Chlorobenzene	3.5	1.732050	B-4,3
MW-49, 10/93	Chloroform	0.5J	73	Cramers
P-06, 9/92	1,2-Dibromoethane			
	Dibromochloromethane	0.4J	15	Cramers
EPA-3, 11/87	1,2-Dichlorobenzene	ND	ND	
B-10, 11/87	1,1-Dichloroethane	0.7J	0.7J	DB-12R
DB-12R, 9/92	MW-43D, 9/92			
	1,2-Dichloroethane	0.5J	47J	MW-44D
P-06, 9/92	cis-1,2-Dichloroethene			
MW-43D, 9/92	1,2-Dichloropropane	4	4	MW-44D
	Ethylbenzene	8.8	2800	I-12,1
P-06, 9/92	Isopropylbenzene	ND	ND	
P-06, 9/92	p-Isopropyltoluene	NA	NA	
MW-43D, 10/93	Methylene Chloride	0.9J	100	B-2,3
B-12, 11/87	Naphthalene	NA	NA	
P-06, 9/92	n-Propylbenzene	NA	NA	
P-06, 9/92	Tetrachloroethene	ND	ND	
B-2, 11/87	Toluene	0.2J	2900	I-12,1
P-06, 9/92	1,1,1,-Trichloroethane	0.3J	2J	MW-57,
DB-12R, 9/92	1,2,3-Trichloropropane	ND	ND	
P-06, 9/92	1,2,4-Trimethylbenzene	NA	NA	
P-06, 9/92				

1,3,5-Trimethylbenzene	NA	NA	
P-06, 9/92			
Xylenes (total)	0.5J	4500	I-12,1
P-06, 9/92			
SEMIVOLATILES			
Acenaphthene	ND	ND	
B-2, 11/87			
Acenaphthylene	290	290	B-2,3
Benzoic Acid	ND	ND	
PZ92-04, 10/93			
bis(2-ethylhexy)phthalate	3J	1000	B-1,
EPA-4, 11/87			
Cyclohexane (C6H12)	NA	NA	
B-2, 3/87			
Dibenzofuran	ND	ND	
B-2, 11/87			
Di-n-butyl phthalate	ND	ND	
Burn Pond, 9/92			
Ethyl methyl benzene	NA	NA	
B-1, 3/87			
Fluoranthene	ND	ND	
B-1, 3/87			
Fborene	1	3600	B-1,3
B-2, 11/87			
2-Methylnaphthalene	33	48	I-12,1
B-2, 11/87			
2-Methylphenol	ND	ND	
B-1, 3/87			
4-Methylphenol	ND	ND	
PZ92-04,10/93			
Naphthalene	1J	19000	B-1,3
B-2, 11/87			
2-Nitrophenol	ND	ND	
B-1, 3/87			
Phenanthrene	1J	11000	B-1,3
B-2, 11/87			
Phenol	ND	ND	
Tours, 11/87			
Phthalate	NA	NA	
B-1, 3/87			
Pyrene	ND	ND	
3/87			
Trimethyl benzene	NA	NA	
B-1, 3/87			

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 WILLIAMS PIPE LINE
 TERMINAL

BURN PON

Summary of Chemical Concentrations of C
 Groundwater Samples
 Collected
 During Phase I, Phase
 (Results i

Non-Validated Ground-water Samples
 Ground-water Samples

Minimum Location of	ANALYTES Maximum Maximum	Minimum	Maximum	Location
		Detection	Detection	Dete
		ug/L	ug/L	
	PESTICIDES			
B-2,11/87	Aldrin	0.015	0.082	B-10
EPA-4,11/87	Alpha-BHC	ND	ND	
B-2,11/87	Beta-BHC	ND	ND	
B-2,11/87	Gamma-BHC	0.02	0.02	B-12
B-4/B-10,11/87	GsmmaChlordane	ND	ND	
B-2,11/87	4,4-DDD	ND	ND	
B-2,11/87	4,4-DDT	ND	ND	
B-10/B-12,11/87	Dieldrin	0.0064	0.1	B-10
EPA-2,11/87	Endosulfan I	0.087	0.18	B-10
B-2,11/87	Endosulfan Sulfate	ND	ND	
B-10,11/87	Endrin	0.085	0.085	B-10
B-2,11/87	Heptachlor	0.018	0.057	B-10
B-2,11/87	Heptachlor Epoxide	0.23	0.7	B-10
	Methoxylchlor	0.044	0.044	B-9
	HERBICIDES			
EPA-1,9/92	2,4-DB	ND	ND	
DB-12R,10/93	Dicamba	NA	NA	
B-08,9/92	Aluminum	9.80J	5500	P-1,
B-4/B-12,11/87	Antimony	41.1	41.10J	MW-44
MW-12,10/93	Arsenic	2.1J	180	B-1,
MW-58,9/92	Barium	88.4J	6900	B-2,
	Beryllium	02	0.56J	MW-44
MW-58,9/92	Cadmium	02	2.2	MW-3,
649000	Calcium	78000	176000	MW-57
	Chromium	2	12000	P-1,
MW-58,9/92	Cobalt	2.9J	19	P-1,
MW-58,9/92	Copper	2.2J	57	P-1,
DB-12R,9/92	Iron	60	45000	P-1,
	Lead	2	30	B-1,

MW-58,9/92			
Magnesium	20900	77300	MW-57
174000			
P-4R,9/92			
Manganese	3.3J	33000	P-1,
MW-47,9/92			
Mercury	9.5	9.5	B-4,
B-2/MW-28,11/87			
Molybdenum	NA	NA	
P-06,9/92			
Nickel	ND	3200	Westegaa
MW-58,9/92			
Potassium	530	13000	P-1,
Watson, C., 11/87			
Selenium	2.2J	7.40J	MW-65
P-06,9/92			
Silver	2.2J	4.70J	MW-57
Sodium	4900	61000	EPA-4
EPA-4,9/92			
Vanadium	17	17	P-1,
MW-58,9/92			
Zinc	30	80	EPA-4
Watson, C., 11/87			
FURANS/DIOXINS			
OCDF	NA	NA	
MW-58,10/93			
TCDDs (Total)	NA	NA	
B-8,10/93			
PeCDDs (Total)	NA	NA	
B-8,10/93			
HxCDDs (Total)	NA	NA	
B-8,10/93			
HpCDDs (Total)	NA	NA	
MW-58,10/93			
1,2,3,4,6,7,8-HpCDD	NA	NA	
MW-58,10/93			
OCDD	NA	NA	
MW-58,10/93			

Only detected compounds listed ug/l: Mic
Shading indicates results from Phase II RI J: Qua
ND: Not Detected B: Com

blank

NA: Not Analyzed

Source: Phase II Investigation Report

TABLE

WILLIAMS PIPE LINE 12TH STREET TERMINAL SUPERFUND SITE

Summary of Total Arsenic Detected in Groundwater
During the Phase I RI, Phase II RI, and Previous Investiga

		(Results in micrograms/liter)						
Oct-93	Monitor Well	Mar-87	Nov-87	Aug-88	Oct-88	Jan-89	Feb-90	Jan-
	B-1	ND20S	NA	NA	NA	NA	NA	NA
	B-2	ND20S	39	NA	NA	NA	NA	NA
	B-3	ND20S	NA	NA	NA	NA	NA	NA

B-4	ND20S	39	NA	NA	NA	NA	NA
B-5	ND20S	NA	NA	NA	NA	NA	NA
B-8	NA	NA	NA	NA	NA	NA	NA
B-10	NA	19	NA	NA	NA	NA	NA
B-12	NA	18	NA	NA	NA	4.20*	NA
DB-12R	NA	NA	NA	NA	NA	2.40*	NA
EPA-1	NA	4.4*	ND2.0	NA	NA	ND2.00	NA
EPA-2	NA	2.3*	ND2.0	NA	NA	NA	NA
EPA-3	NA	2.8*	ND2.0	NA	NA	ND2.00	NA
EPA-4	NA	3.3*	ND2.0	NA	NA	NA	NA
EPA-5	NA	ND2.2	ND2.0	NA	NA	2.10*	NA
F-10	NA	NA	NA	ND2	NA	NA	NA
I-1	NA	NA	NA	NA	NA	NA	NA
I-7	NA	NA	NA	NA	NA	NA	NA
I-12	NA	NA	NA	ND2	NA	NA	NA
MW-3	NA	NA	NA	ND2	NA	NA	NA
MW-12	NA	NA	NA	NA	NA	NA	NA
MW-39	NA	NA	NA	NA	NA	NA	NA
MW-42R	NA	NA	NA	NA	NA	NA	ND
MW-43D	NA	NA	NA	NA	NA	3.10*	NA
MW-44D	NA	NA	NA	NA	NA	ND2.00	NA
MW-47	NA	NA	NA	NA	NA	NA	NA
MW-48	NA	NA	NA	NA	NA	NA	NA
MW-49	NA	NA	NA	NA	NA	NA	NA
MW-57	NA	NA	NA	NA	NA	4.90*	NA
MW-58	NA	NA	NA	NA	NA	NA	NA
MW-65	NA	NA	NA	NA	NA	ND2.00	NA
MW-66	NA	NA	NA	NA	NA	2.20*	NA
P-1	NA	NA	NA	NA	ND50	NA	NA
P-4R	NA	NA	NA	NA	NA	NA	NA
P-6	NA	NA	NA	NA	NA	NA	NA
P-11	NA	NA	NA	NA	NA	NA	NA
P-13	NA	NA	NA	NA	NA	NA	NA
P-14R	NA	NA	NA	NA	NA	NA	NA
PZ92-04	NA	NA	NA	NA	NA	NA	NA
EST	NA	NA	NA	NA	NA	NA	NA
RW-5	NA	NA	NA	NA	NA	NA	NA

NA = Not Analyzed

ND = Not Detected, number refers to detection limit

J = Estimated Concentration

S = Indicates spike recovery is within control limits

* = compound was detected but below the contract detection limit

Source: Phase II Investigation Report

TABLE 5

WILLIAMS PIPE LINE 12TH STREET TERMINAL
BURN POND SUPERFUND SITE

Summary of Arsenic Detected in Filtered Groundwater
During Phase I and Phase II R1

(Results in micrograms/liter)

Monitor Well	Phase I Sep-92	Phase II Oct-93
B-8	ND2.0	ND1.0
B-12	2.5	ND2.4
DB-12R	ND2.0	3.6

EPA-1	ND2.0	ND1.0
EPA-2	NA	ND1.0
EPA-3	ND2.0	ND1.0
EPA-4	ND2.0	ND1.0
I-1	NA	ND2.6
I-7	NA	ND4.0
MW-12	NA	ND1.0
MW-39	ND2.0	ND1.0
MW-42R	ND2.0	ND1.0
MW-43D	19.5	22.3
MW-47	ND2.0	ND1.0
MW-48	ND2.0	ND1.0
MW-49	ND2.0	ND1.0
MW-57	2.2	ND1.0
MW-58	ND2.0	ND1.0
MW-65	ND2.0	ND1.0
MW-66	ND2.0	ND1.0
P-1	NA	7.5
P-4R	11.1	7.4
P-6	81.8	68.0J
P-11	NA	114
P-13	NA	64.2
P-14R	NA	15.6
PZ92-04	NA	45.7J
EST	21.5	27.0J
RW-5	11	39.9J

J = Estimated Concentration

ND = Not Detected; number following is the detection limit

NA = Not Analyzed

Source: Phase II Investigation Report

Table 6
WILLIAMS PIPE LINE TERMINAL SUPERFUND SITE
Contaminants of Concern (COCs) for
Phase I and II ** Remedial Investigation

Soil

VOCs:

2-methylnaphthalene*
benzene
dibenzofuran*

Semivolatiles:

acenaphthene
anthracene
benzo(a)anthracene
benzo(a)pyrene
benzo(b)fluoranthene
benzo(g,h,i)perylene
benzo(k)fluoranthene
chrysene
fluoranthene
fluorene
indeno(1,2,3-ed)pyrene
phenanthrene
pyrene

Dioxins/Furans:

Total HxCDD
1234678-HpCDD
Total HpCDD
Total TCDF
Total PeCDF
234678- HxCDF
Total HxCDF
1234678-HpCDF
Total HpCDF
OCDF

Metals:

arsenic
lead*

PCBs:

Aroclor-1254

Groundwater

VOCs:

1,1-dichloroethane*
 1,1,1-trichloroethane*
 1,2-dibromoethane
 1,2-dichloroethane
 1,2,3-trichloropropane
 benzene
 bromodichloromethane
 chloroform
 dibromochloromethane
 naphthalene

Semivolatiles:

2-methylinaphthalene*
 4-methylphenol*
 acenaphthene
 dibenzofuran*
 fluorene
 phenanthrene

Metals:

arsenic

* Qualitatively assessed in risk characterization

** Soils were addressed only in Phase I

Shaded chemicals were eliminated as COCs in Phase II BRA Screening

Table 7
 CANCER RISK ESTIM

Reasonable Maximum Exposure

RECEPTOR	PATHWAY	CHEMICAL
TOTAL PATHWAY RISK		
CHEMICAL-	TOTAL PATHWAY	
RISK		
RISK		
Current or	Ingestion of offsite	Arsenic (total)
1E-03 future area	groundwater	
1E-03		
Future onsite	Ingestion of onsite	Phenanthrene
2E-04 resident (adult)	groundwater	
	Benzene	3E-04
		Arsenic (total)
		Arsenic (dissolved)
3E-03 (total As)		
3E-03 (dissolved)		
Future onsite	Inadvertent ingestion	
1E-04 resident (child)	of burn pond surface	Benzo (a) anthracene
	soil	
		Benzo (b) fluoranthene

Benzo (k) fluoranthene 7E-05

pyrene Indeno (1,2,3,-cd)

Benzo (a) Pyrene

Total PeCDF

Aroclo - 1254

3E-03

Notes: 2E-04 = 2 x 10-4

PeCDF = total pentachlorodibenzofuran

levels. Total As = used unfiltered groundwater samples that included tota

arsenic levels. Dissolved As = used filtered groundwater samples that included di

TA
CHRONIC NON-CANCER HA

ESTIMATES

REASONABLE
MAXIMUM EXPOSURE

RECEPTOR	PATHWAY	CHEMICAL	C
TOTAL PATHWAY HQ			
CHEMICAL	TOTAL PATHWAY HQ		SP
HQ			

167	Current or	Ingestion of	Arsenic (total)
0	future area	offsite	Arsenic (dissolved)
	167 (total As)		
	resident	groundwater	
	0.1		
	(dissolved As)		

3.7	Future onsite	Indestion of	Naphthalene
	resident (adult)	onsite	
		groundwater	
			Arsenic (total)
			Arsenic (dissolved)

94 (total As)

55 (dissolved As)

10.7	Future onsite	Inadvertent	Pyrene
	resident (child)	ingestion of burn	Arsenic
		pond surface	

11.1

soil

Notes: HQ = Hazard Quotient

Total As = used unfiltered groundwater samples that included total arsenic levels.

Dissolved As = used filtered groundwater samples that included dissolved arsenic levels.

Dissolved Arsenic for this pathway is below the acceptable hazard levels included for comparison purposes.

LETTER FROM THE STATE OF SOUTH DAKOTA

SOUTH DAKOTA

DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3

GREAT FACES, GREAT PLACES

October 19, 1994

William P. Yellowtail, Regional Administrator
United States Environmental Protection Agency
Region VIII
999 18th Street - Suite 500
Denver, Colorado 80202-2466

Re: Record of Decision
Williams Pipe Line Disposal Pit Superfund Site
Sioux Falls, Minnehaha County, South Dakota

Dear Mr. Yellowtail:

This letter serves as official notice that the state of South Dakota, as represented by the Department of Environment and Natural Resources, concurs with the U.S. Environmental Protection Agency's Record of Decision concerning the Williams Pipe Line Disposal Pit Superfund Site. Under this Decision, the U.S. Environmental Protection Agency has decided that no further action is necessary at this Superfund site to protect human health and the environment. A minimum of two years of quarterly groundwater monitoring will be performed to verify that unacceptable exposure will not occur in the future. This Decision concerns only those contaminants regulated under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended by the Superfund Amendments and Reauthorization Act of 1986.

Separate from this Decision is the ongoing assessment/ remediation of petroleum and nitrate contamination being performed at the site under the state's authority.

Sincerely,

Robert E. Roberts

Secretary

cy: Tom Anderst, City Attorney's Office, Sioux Falls
Jerry Langley, Williams Pipe Line Company, Tulsa, OK

RESPONSIVENESS SUMMARY FOR
WILLIAMS PIPE LINE DISPOSAL PIT SUPERFUND SITE
RECORD OF DECISION

September 1994

Environmental Protection Agency
Region VIII
Denver, Colorado

RESPONSIVENESS SUMMARY FOR
WILLIAMS PIPE LINE DISPOSAL PIT SUPERFUND SITE
RECORD OF DECISION

This responsiveness summary provides an overview of public and the State South Dakota's (State) reaction to the preferred alternative; background community involvement; and summary of public comments and EPA's responses

I. OVERVIEW

The preferred alternative stated in the Proposed Plan for the Williams Pi Disposal Pit Superfund Site (Site) was "No Action with groundwater monito The groundwater monitoring for 1 to 2 years was proposed to confirm that groundwater contamination from arsenic is not escaping from the Williams Line Terminal (Terminal) and presenting a potential drinking water risk. Proposed Plan clearly stated that the No Action alternative pertained onl Superfund work. It was assumed ongoing cleanup of groundwater petroleum contamination would continue under State authorities. Petroleum is exemp regulation under the Superfund law.

The Proposed Plan was mailed to approximately 450 community residents, lo officials, and interested parties. The public comment period ran from Ju August 27, 1994. No written comments were received.

A public meeting was held on August 16, 1994, at the Hayward Elementary

School in Sioux Falls, South Dakota. The meeting was attended by numerous Williams Pipe Line Company representatives, several State employees, a co commissioner, a city attorney, and several local residents. During the meeting citizens asked clarifying questions relating to the scope of the investigation findings.

Also on August 16, 1994, the EPA project manager, State project manager, State hydrogeologist held a series of meetings with the staff of South Dakota national senators and representatives, one State representative, and city. The EPA project manager also met with one county commissioner on August 1. The meetings were to answer questions these officials might have prior to public meeting. Most of these people were unable to attend the public meeting.

The local officials appeared most concerned about continuing clean up of petroleum related groundwater contamination at the Terminal. They appear satisfied that the Proposed Plan stated that EPA's preferred alternative to the Superfund Site and the petroleum clean up was and would continue to be handled under State authorities. The State also wanted to assure that Williams Pipe Line as well as the public understood the scope of the preferred remedy outlined in the Proposed Plan.

II. COMMUNITY INVOLVEMENT

More detail about past community involvement is provided in the Record of Decision. Several fact sheets were issued to keep the community informed during the Remedial Investigation (RI) process. In addition to the fact sheets during the RI, the Auras Leader newspaper published several articles that provided updates on the RI.

Inquiries about the investigation from citizens have been low to non-existent during the RI. This is in comparison to the considerable concern expressed by citizens and local officials when the Site was first discovered. Many of these early concerns were addressed when Williams Pipe Line and the State took steps to address the groundwater petroleum contamination that had spread beyond the Terminal boundaries.

III. SUMMARY OF PUBLIC COMMENTS AND EPA RESPONSES

COMMENT/QUESTION: Mr. Nelson Vollink asked whether groundwater samples were taken repeatedly farther away from the burn pond until no more contamination was found.

RESPONSE: No, the sampling was not designed as such. However, the sampling results did include a boundary of wells where no detection of contaminant was found. It should be noted that the investigation centered on areas to the east, and southeast of burn pond which is located in the eastern portion of the Terminal. Groundwater was sampled during two RI phases. A larger number of wells were sampled during the second phase. Dioxin and furans were only analyzed for during the second phase.

In most cases, no contamination was detected in the groundwater monitoring sampled outside the Terminal boundaries. The few exceptions are explained as follows.

In one well north of the burn pond and Terminal a very low amount of 2,4-DB herbicide was found. This did not appear to be associated with the burn pond since several wells between the burn pond and the well were void of contamination. The levels also were low enough not to cause a health concern.

Low levels of dioxin and furan compounds were found in two wells near the Terminal property. One well was located northeast of the burn pond and one southeast of the burn pond. No contaminants were found in a number of wells between each of these wells and between the wells and burn pond. Therefore, it was concluded the contamination was not associated with the burn pond. Again, levels and types of compounds found did not create a health th

Total or unfiltered arsenic was found outside the Terminal boundaries. As explained in the Proposed Plan and Record of Decision (ROD), it is believed that no exposure to the total arsenic in groundwater occurs. This is mainly because the arsenic in these samples appears to be associated with sediment that was collected with the groundwater sample. Dissolved or filtered arsenic was not found outside the Terminal boundaries.

Several contaminants associated with petroleum were found in wells outside the Terminal property during the first phase of the RI. Additional wells were sampled during the second RI phase and only two contaminants associated with petroleum were found in one well southeast of the Terminal property. Again, a number of wells with detection of these contaminants were located between the well and the burn pond. Petroleum is exempt from Superfund and the cleanup of petroleum contamination is being addressed under State authorities.

COMMENT/QUESTION: Sue Brendon asked if there was any contamination found in the wells northeast of the burn pond and Terminal property near the residences.

RESPONSE: No contamination was found in the groundwater monitoring well during the RI in the area of the residences.

Contamination, mainly pesticides, were found in several of these wells during the listing investigation in 1987. Therefore, the groundwater monitoring wells northeast of the Terminal property were sampled in both phases of the Remedial Investigation (RI).

Additionally, there is a groundwater recovery well located north of the burn pond which has influenced the direction of the groundwater flow. Data shows that groundwater near the burn pond is being captured by the recovery well or the groundwater interception trench located southeast of the burn pond. Groundwater is currently not moving from the burn pond to the area of concern northeast of the Terminal property.